

Measures of Southern Binary Stars in 1907. By John Tebbutt.

I have pleasure in forwarding to the Society the results of a series of measures which I have made of the most interesting southern binary stars with the 8-inch equatorial, in the same manner as described in my paper in *Monthly Notices*, vol. lxvi. On the evenings of August 23, 24, 25 and September 15, 16, I attempted to measure the rapid binary Lacaille 7194, but failed to see the companion, although it was readily seen and measured by me in 1902. See *Monthly Notices* for November 1903. The non-visibility of the companion has been confirmed by observations subsequently made at my request at the Sydney Observatory.

Star.	Epoch.	Position Angle.	Distance.	No. of Evenings for		Hour Angle.
				Position Angle.	Distance.	
α Centauri	1907·410	213°·8	20"·67	6	6	E.
β 416	·567	274°·2	2"·09	5	5	E.
γ Coronæ Aust.	·617	117°·3	1"·83	4	4	E.
δ 5014	·652	...	1"·54	...	1	E.
„	·660	240°·3	...	3	...	E.
γ Centauri	·673	353°·2	1"·42	5	2	W.
β Muscæ	·673	346°·1	1"·28	5	2	W.
π Lupi	·704	84°·5	1"·42	7	3	W.
μ Lupi	·737	153°·3	1"·83	6	3	W.
γ Circini	·737	70°·2	1"·46	5	3	W.
δ Lupi	·812	1°·4	...	2	...	W.
β Phœnicis	·875	12°·2	1"·55	5	3	E.
p Eridani	·907	216°·6	8"·23	3	4	E.
Lacaille 2145	·964	45°·2	1"·89	4	4	E.

*The Observatory,
The Peninsula, Windsor, N.S. Wales :
1908 January 23.*

On the relative numbers of Star Images photographed in different parts of the Plates for the Oxford portion of the Astrographic Catalogue. Second Paper. By H. H. Turner, D.Sc., F.R.S., Savilian Professor.

1. In *Monthly Notices*, lxii. p. 434, a preliminary discussion was given of the counts of star images in different parts of plates taken for the *Astrographic Catalogue*; and it was shown that the star density was greatest at a certain distance (r_0) from the centre of the plate and fell off rapidly outside this distance; the value of r_0 for different object-glasses being different,—e.g. for Oxford $r_0 = 33'$, for Paris $r_0 = 58'$, for Algiers $r_0 = 49'$, for Toulouse $r_0 = 30'$.

The natural inference is that the value of r_0 depends on the position of the plate, increasing as the plate is pushed further within the focus.

Similar results were found for the Potsdam telescope, with $r_0 = 28'$ (*Astron. Nachrichten*, No. 3817); and for the Greenwich telescope with $r_0 = 38'$ (*Greenwich Astrographic Catalogue*, vol. i., pp. vi and vii). On the other hand, the late M. Loewy has questioned the reality of the phenomenon in his annual report of the Paris Observatory for 1905, in the following terms:—

“D'autres expériences ont eu pour objet de déterminer jusqu'à quel point une même carte pouvait être considérée comme homogène au point de vue des grandeurs. On sait que M. H. H. Turner a été conduit à penser que cette homogénéité laissait à désirer, en faisant, pour un grand nombre d'épreuves publiées, le relevé des nombres d'étoiles qui tombent dans les divers carrés du réseau. Pour contrôler ce résultat par une autre voie, on a photographié un groupe d'étoiles avec des poses, décroissantes et de légers déplacements systématiques, afin d'obtenir des images faciles à identifier, et en même temps à la limite de visibilité. On a ensuite répété l'opération en imprimant à la lunette d'autres déplacements systématiques de manière à donner le même temps de pose aux mêmes étoiles dans diverses parties de la plaque. On a pu ainsi constater que la visibilité des images relatives aux astres les plus faibles est la même dans toutes les régions du champ. Le défaut signalé par M. Turner, et qui a pu se produire à la suite d'une mise au foyer défectueuse, ne semble donc pas très redoutable dans les circonstances actuelles” (p. 10).

One possible interpretation of the discrepancy between M. Loewy's conclusion and those above quoted is that his test was not so delicate a one as the numerical test elsewhere applied. The results obtained by counting star images are consistent and definite, and clearly afford a satisfactory measure of something. The fact that other methods fail to detect that something may therefore only enhance the value of the method which reveals it: there are almost certain to be uses to which a new test can be applied, even though they may not be foreseen at the moment. The quantity